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Case Report
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Soft Tissue Chondroma Presenting as Neck Mass: A Rare Case Report

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Abstract

Background: Soft tissue chondroma (STC) is a rare, benign, cartilaginous tumor typically found in the hands and feet but can occur elsewhere, including the head and neck, which account for about 2% of cases. Although rare, recognition of these lesions is very important due to their recurrence and the need to assess excisional margin status.

Objective: This case report aims to raise awareness of the possibility of a soft-tissue chondroma in the neck region. Additionally, it emphasizes the importance of achieving tumor-free excision to prevent recurrence.

Case Presentation: We report a 37-year-old male with a painless, slowly growing neck mass. Physical examination revealed a hard, tubular lesion. Ultrasonography indicated a well-defined. slightly hyperechoic mass in the subcutis suspected of lipoma. Histopathology confirms a well-demarcated nodule with hypercellularity of chondrocytes, consistent with STC. The excision was complete, and the patient showed no signs of recurrence after 1 year.

Conclusion: The clinician should consider STC in the differential diagnosis of head and neck masses, and the pathologist should ensure a clear excisional margin to prevent recurrence.

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INTRODUCTION

Soft tissue chondroma (STC), or extraskeletal chondroma, is an uncommon, benign cartilage tumor that occurs in soft tissues and is not linked to bone or periosteum.[1,2] It was initially described by Baumuller in 1883.[3] The number of cases that have been documented in the literature is just over 200.[4] Soft tissue chondroma accounts for only 1.5% of all benign soft tissue tumors.[5] Soft tissue in the hand and foot is most commonly affected, but it can also affect the dura, oral cavity, pharynx, larynx, fallopian tube, posterior mediastinum, skin, and parotid gland.[1,6,7,8] These tumors are located in extraosseous and extrasynovial locations.[6] Because of the rarity of these tumors, underdiagnosis occurs frequently. Although rare, the recognition of these lesions is very important due to their recurrence and the importance of the excisional margin status assessment

This report details the case of a 37-year-old man with a neck mass, who underwent an excision procedure and was diagnosed with STC. The case highlights the need to broaden the differential diagnosis of neck soft-tissue masses and emphasizes the importance of assessing excisional margins.

CASE PRESENTATION

A 37-year-old male presented with a gradually enlarging, painless lump in his neck. He had no history of prior trauma to the face or neck and reported no issues with voice changes, difficulty swallowing, or trouble moving his neck. Additionally, there was no history of weight loss. Physical palpation showed a tubular lesion with hard consistency, a firm, non-pulsating mass that moved easily from its base, and was 1 cm in diameter. Ultrasono-graphy revealed a slightly hyperechoic, ovoid, well-demarcated, and regular mass measuring 0.84 x 0.29 x 0.82 cm in the subcutis, suspected to be a lipoma. (Figure 1).

An excisional procedure was performed, and histopathological examination showed skin tissue with the subcutaneous layer containing a well-demarcated nodule circumscribed by fibrous tissue. The nodule is composed of the proliferation of hypercellular chondrocytes between the myxoid and hyaline matrix. The chondrocytes were within lacunae with small, round, and hyperchromatic nuclei. There was no cytologic abnormality, mitotic activity, or necrosis (Figures 1 and 2). There was no evidence of calcification or ossification. The histopathological findings confirmed a diagnosis of soft tissue chondroma (STC). The excisional margins are free of tumors (Figure 3). The patient reports no signs of recurrence after 1 year.

DISCUSSION

Soft tissue chondroma (synonyms: osteochondroma, chondroma of soft part, fibrochondroma, myxochondroma, extraskeletal chondroma) is a benign cartilaginous tumor that, on rare occasion, may also occur extraskeletally.[9] Soft tissue chondroma typically manifests as a painless and slow-growing mass.[1] Clinically, soft tissue chondromas are typically asymptomatic unless they grow large enough to exert pressure on surrounding nerves or cause cosmetic deformities.[10–12] It frequently affects adults aged 30–60 years and rarely affects children, with no sex differences in prevalence.[1,6,13] Our case similarly involves a 37-year-old patient who presented with a slowly enlarging,

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painless tumor. Soft tissue chondromas in the head and neck region, as seen in this case, are relatively rare. Only 2% of reported cases occur in the head and neck, while the majority are found in the upper extremities (72%) and lower extremities (24%).[13] Temsamani et al. documented an extraskeletal chondroma of the neck in a 12-year-old patient in 2016.[14] Although many STCs are painless, these lesions can still cause pain, as reported by Mariano and Fallat. They reported a case of a rare, painful STC in the pedal region. [4]

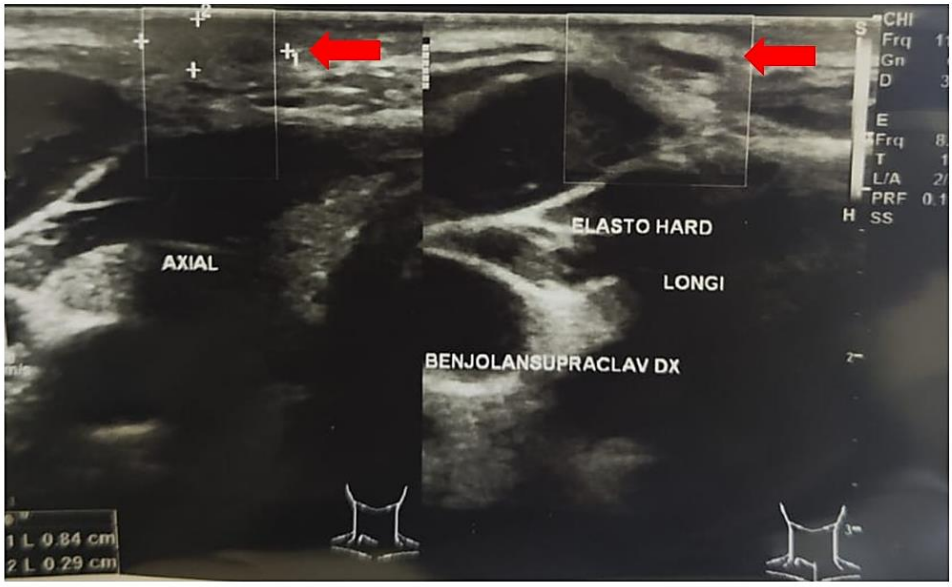

Figure 1. Ultrasonography showed a slightly hyperechoic ovoid, well-demarcated, and regular mass (red arrow)

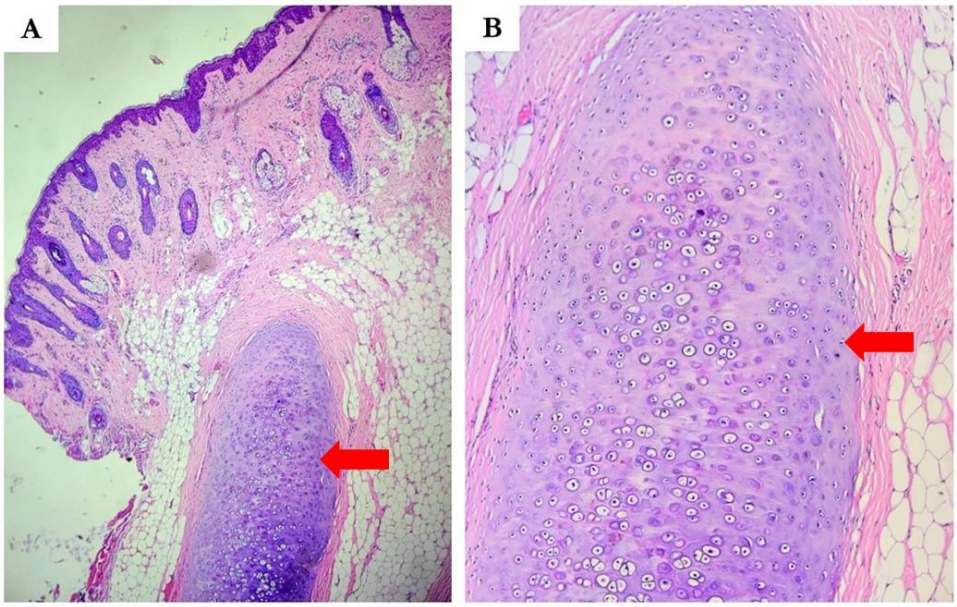

Figure 2. A, B. A well-demarcated nodule circumscribed by fibrous tissue in the subcutaneous layer. The nodule is composed of hypercellular chondrocytes between the myxoid and hyaline matrix (red arrow) (HE, 40x, 100x).

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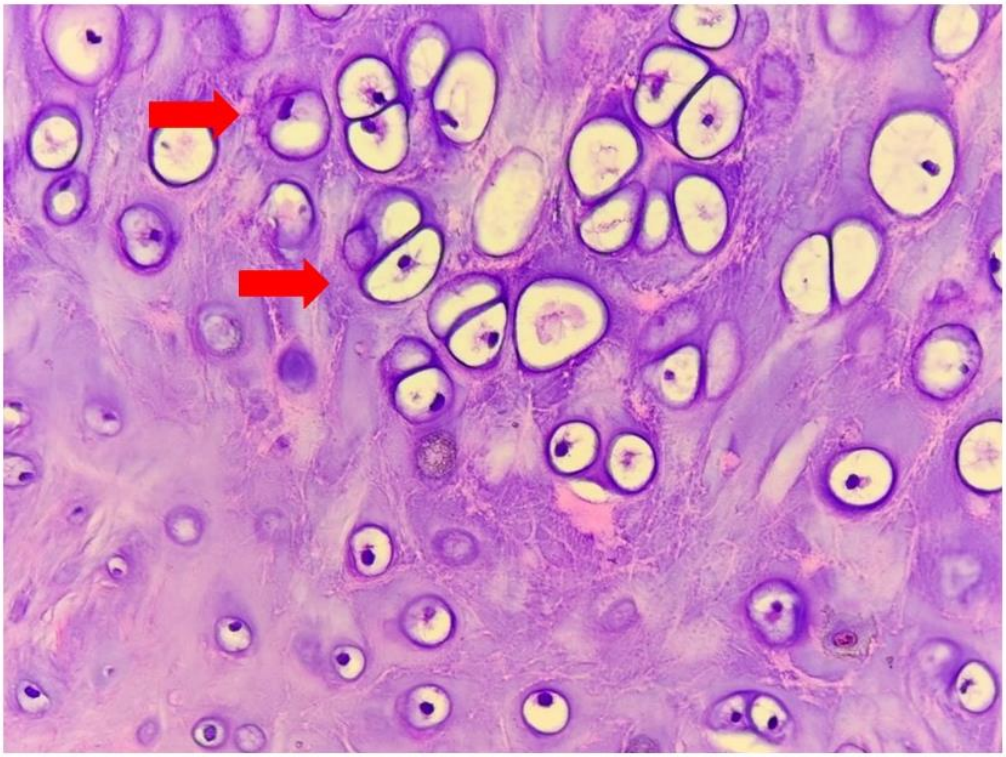

Figure 3. The chondrocytes were within lacunae without atypical nuclei (red arrow) (HE, 400x)

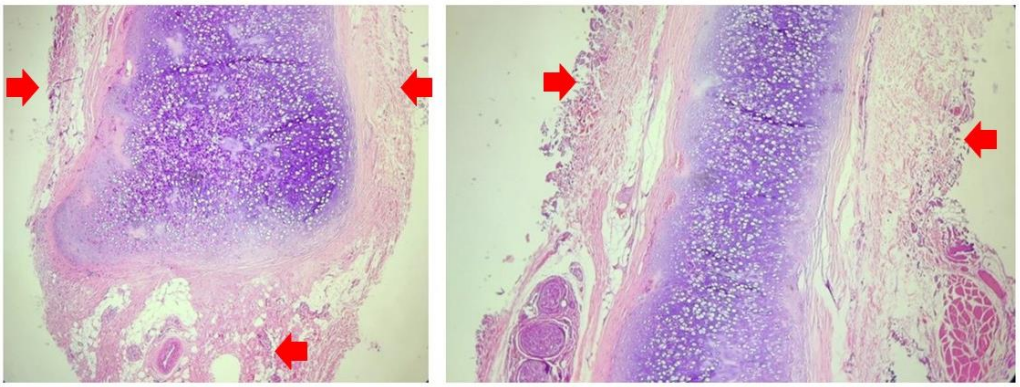

Figure 4. Tumor-free excisional margin status (red arrow) (HE, 40x)

Because STC is often not visible on plain-film radiographs, advanced imaging modalities can be crucial for preoperative detection. Magnetic resonance imaging (MRI) is the most effective diagnostic tool for benign soft-tissue chondromas, as it provides clear visualization of the mass, its borders, and its relationship to adjacent bone and synovium. This allows differentiation among benign soft-tissue extraskeletal osteochondroma, soft-tissue chondrosarcoma, and malignant synovial sarcoma. The T2-weighted MRI signal intensity of soft tissue chondroma varies with water content and calcification.[15] Calcifications observed on radiographs are reported in 33% to 70% of cases, which may warrant the use of advanced imaging techniques such as MRI.[4]

Macroscopically, STCs are well-defined, round-to-oval masses with a diameter rarely

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exceeding 3 cm.[4] It may occasionally become friable if cystic changes occur. A proper diagnosis requires a histopathologic examination. Histologically, the tumor is well-defined, featuring lobules of mature chondrocytes or chondroblasts embedded within a hyaline matrix.[1] The lack of nuclear mitoses further differentiates benign immature cells from malignant atypical cells.[16] In our case, a clearly defined nodule surrounded by fibrous tissue was observed, with chondrocytes located within lacunae and no mitotic figures present.

Extraskeletal chondroma can be intradermal or subcutaneous. If the tumor affected only the dermis, it was referred to as a chondroma cutis. If the tumor also affected the subcutis, it was more appropriately called a soft tissue chondroma. [17] In our case, the lesion was located within the subcutis, so it is more suitable for soft tissue chondroma.

Various types of STC exist, with notable fibrous, ossified, or myxoid alterations that may classify these tumors as myxochondromas or osteochondromas. STC can sometimes display chondroblastic characteristics. Granuloma-like reactions with multinucleated giant cells and epithelioid cells are rare features.[6]

The histological differential diagnoses for soft tissue chondroma (STC) include chondroid syringoma, myxoid chondrosarcoma, synovial chondromatosis, extraskeletal tumoral calcinosis, juxtacortical chondroma or periosteal, and calcifying aponeurotic fibroma. Calcifying aponeurotic fibromas primarily affect the hands of young individuals and are microscopically distinguished by short, bar-like regions of cartilaginous metaplasia encircled by infiltrating fascicles of fibromatous, plump fibroblasts. Tumoral calcinosis is similar to a highly calcified chondroma but does not contain cartilage and exhibits a histiocytic reaction to the calcified deposits. Synovial chondromatosis is characterized by multiple hyaline cartilage nodules in close relation to the synovium, which may be embedded in the subsynovial tissue or present in the synovial fluid, either attached to the synovium or as free-floating bodies. Conversely, soft tissue chondromas are not connected to the synovial membrane.[18] Extraskeletal myxoid chondrosarcoma may appear similar to the myxoid variant of soft tissue chondroma; however, chondromas are typically smaller, better defined, less cellular, and exhibit more differentiated cells. Conversely, chondroid syringoma is characterized by eccrine ducts and glands embedded within a myxoid matrix and demonstrates cartilaginous differentiation. [1]

The pathogenesis of this tumor is still being debated. A chondroma or cartilaginous tissue may develop in areas where cartilage was previously present during organ development. According to the literature, tongue chondromas are believed to originate from residual embryonal tissue in areas of pre-existing fetal cartilage or from pluripotent mesenchymal cells that undergo metaplasia in response to an irritant.[19] Some researchers propose that these tumors stem from the synovial sheath due to developmental defects. In contrast, others advocate for the theory of island activation of heterotopic cartilaginous tissue or metaplastic events. Reports exist of multiple soft-tissue chondromas linked to autosomal dominant inheritance. Recent studies have pinpointed nonrandom clonal alterations in chromosomes 6, 11, and 12 as potential contributors to the de-

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velopment of soft tissue chondromas. Additionally, molecular analysis has linked the HMGA2 gene, located at 12q15, to this condition and to lipomas.[13,16] A recent study by Amary showed that FISH detected FN1 alterations in 50% of cases. In soft tissue chondromas, RNA sequencing revealed a fusion between FN1 and fibroblast growth factor receptor 2 (FGFR2), while FISH confirmed the consistent involvement of both FGFR2 and FGFR1.[18]

The literature recommends complete excision as the preferred approach.[13] It is advised to fully excise the tumor, including the surrounding capsule and attachment points, to prevent local recurrence.[10] No published records exist of the malignant transformation and metastasis of an STC.[18,20] The recurrence rate is around 15-18%, primarily due to inadequate removal of the lesion.[13,19] A new resection may be the best option in the event of a recurrence.[14] In our case, the clinician was able to achieve a tumor-free excisional margin, and the patient did not show symptoms of recurrence up to 1 year after the procedure. Therefore, pathologists must be able to assess this lesion and provide information regarding the excisional margin status and recurrence.

CONCLUSION

Soft tissue chondroma is a rare, benign cartilage tumor that can occur in various locations, such as the neck. Clinicians and pathologists should consider STC among the differential diagnoses for head and neck masses. Pathologists should assess the excisional margin status in STC to inform the clinician and avoid the possibility of recurrence.

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